

What is claimed is:

1. In a safety apparatus against automobile clash,  
comprising:

at least one imaging means for picking up an image  
5 including a passenger on a seat;

extracting means for extracting passenger's  
information on the basis of passenger's head image;

safety means for protecting said passenger against  
said automobile clash; and

10 controlling means for controlling said safety means on  
the basis of said passenger's information,

characterized in that said extracting means:

stores reference images similar to head outlines a part  
of which is a part of an ellipse;

15 detects said ellipse in an image outputted from said  
imaging means;

selects one of said reference images almost the same as  
that of said passenger; and

outputs said passenger's information included in said  
20 selected one of said reference images.

2. The safety apparatus according to claim 1, wherein  
said reference image is limited to said ellipse.

3. The safety apparatus according to claim 1, wherein  
said safety means is an air bag.

25 4. The safety apparatus according to claim 1,  
wherein:

said reference images represent kinds of said  
passenger; and

said passenger's information is one of said kinds.

5       5. The safety apparatus according to claim 1, wherein  
said extracting means determines that said seat is vacant,  
if any image almost the same as that of said passenger can  
not be selected.

6. The safety apparatus according to claim 1, wherein  
said passenger's information is a position of said passenger  
along the front-rear direction.

10       7. The safety apparatus according to claim 1, wherein  
said reference images include the detected image of said  
passenger including said ellipse.

8. The safety apparatus according to claim 7, wherein  
a region including said detected image of said passenger is  
preferentially processed at a time to come.

15       9. The safety apparatus according to claim 8, wherein  
only said region is preferentially processed.

20       10. The safety apparatus according to claim 9,  
wherein when any image was not detected within said  
region, whole of a two dimensional image area is processed  
at next time to come.

11. The safety apparatus according to claim 9,  
wherein when any image was not detected within said  
region, whole of a two dimensional image area is further  
continuously processed.

25       12. The safety apparatus according to according to  
claim 2, wherein a shape and position of said ellipse  
expressed by mathematical parameters are employed for  
selecting one of said reference images almost the same as

that of said passenger.

13. The safety apparatus according to claim 1, wherein said imaging means is or are disposed at a lateral side of said seat.

5 14. The safety apparatus according to claim 1, wherein said imaging means are disposed at both lateral sides of said seat.

15 15. The safety apparatus according to claim 1, wherein said imaging means are disposed at a lateral side and a rear of said seat.

16. The safety apparatus according to claim 1, wherein a couple of said imaging means constructs a stereo range finder.

15 17. The safety apparatus according to claim 1, wherein another imaging means enlarges or reducing a picked-up image in accordance with a position of the passenger's head measured by said range finder.

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